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(54) **Hermetically sealed package and method of producing the same.**

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BACKGROUND OF THE INVENTION

(1) Field of the Invention

The present invention relates to a hermetically sealed package useful for packaging foods or liquids and to method of producing the hermetically sealed package and more particularly, to hermetically sealed package having a top film which may be opened and closed repeatedly by pressure sensitive adhesive and to method of producing the hermetically sealed package.

(2) Description of the Related Art

In conventional method of closing a plastic container filled with an article such as jelly by means of a top film, a top film made of a plastic material of a type similar to that of container material has been used to be adhered by heat sealing to the flange portion surrounding the container. Though the coefficient of adhesion between the top film and the container varies depending on the temperature and pressure of heat sealing, it is generally so large (about 3 kg/ 25 mm width) that the top film cannot be torn off by means of fingers and needs to be cut with a cutting instrument to gain access to the content in the container. If the heat seal is weakened for the facility of opening, there will be caused the possibility of incomplete seal or accidental opening of the sealed package during storage or conveyance.

To obviate the defect of the conventional method, there has been employed a method of heat sealing a container at the flange portion thereof with a top film which has been provided with a layer coated with a wax (melt layer). (This method is called hot melt method.) This method utilizes cohesive failure of the melt layer caused by the difference between the adhesion force and cohesive force thereof and thereby makes it easy to separate top film away. However, this method has a defect of lacking in oil resistance.

In another method, a top film made of a material different from that of container and provided with an adhesive resin layer comprising vinyl acetate copolymer is heat sealed to the container. In this method, proper selection of pressure, time, and temperature of heat sealing permits to control the bonding strength (for example, 800 g/ 25 mm width to 1.2 kg/ 25 mm width) so that even infants or the aged can peel off the top film from the container with fingers. However, this method also has a defect that the heat sealed portion is so poor in heating tolerance that the package thus produced cannot be used for packaging articles which are to be subjected to heating treatment, such as retort treatment, since the heat sealed portion will be marred by pinholes generated during such treatment.

FR-A-2 434 765 discloses a package wherein the container portion thereof having a recessed portion and a flange portion surrounding the recessed portion is formed from a two-layered multilayer sheet, and a notch surrounding the boundary between the recessed portion and the flange portion is provided in the innermost layer of the multilayer sheet on the flange portion. The container is sealed with a top film sheet to form a hermetically sealed package. The top film comprises a lid portion and a tab portion extending from the rim of the lid portion, and the tab portion will not be adhered to the flange portion. When the hermetically sealed package is opened, the tab portion is pulled to be separated from the edge of the container, whereby the multilayer sheet is initially delaminated from the edge of the package and the delamination progresses to the notch of the container, with a part of the innermost layer outside the notch remaining adhered to the top film. By pulling progressively the tab portion, the above-mentioned part of the innermost layer is separated away with the top film from the container, and the hermetically sealed package is consequently opened. This method utilizes the difference between the adhesion strength between the layers of the multilayer sheet (for example, 300 to 1,200 g/ 25 mm width) and the adhesion strength between the container and the top film (for example, 3 kg/ 25 mm width).

The increase of small households, particularly one-person households, and the requirement for the rationalization of life presents an ever-increasing demand for such hermetically sealed packages as throwaway packages for various foods and liquids, sanitary articles, etc.

However, a consumer of hermetically sealed package does not always consume whole article packaged at a time. In the conventional hermetically sealed packages, the top film once opened cannot be reused for preserving the remaining article.

Therefore, when the article to be packaged is a sanitary article, such as pocket disinfecting cotton or disinfecting towel, or foods being apt to be easily damaged by dryness or dampness, the article should be packaged in an amount enough to a single usage. For example, some articles such as pickled plums are on the market in a form packaged individually. Such packaging however increases the cost of packaging and is

also undesirable from the viewpoint of resource-saving. For all that, it is troublesome to transfer the remaining article into another container for preservation.

Therefore, there has been a demand for an inexpensive hermetically sealed package having a top film which can be reused for preserving the remaining article. Nevertheless, there has been provided no throwaway, hermetically sealed package satisfying the demand as far as the present inventors know.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a throwaway, hermetically sealed package which can package hermetically an article in an amount sufficient for plural usages and has a top film being able to be reused repeatedly after being opened, and to provide a method of producing the hermetically sealed package.

Another object of the present invention is to provide a hermetically sealed package which is strongly sealed before use or during display and can be easily opened at the time of opening, and to provide a method of producing the hermetically sealed package.

Accordingly, the present invention provides a hermetically sealed package comprising:

(A) a multilayer container 10 comprising at least an innermost layer a and a layer b adjacent to the innermost layer a, the multilayer container 10 including

- (1) a recessed portion 11;
- (2) a flat flange portion 12 adjoining integrally the rim of the recessed portion 11; and
- (3) a notch 13 surrounding the boundary between the recessed portion 11 and the flat flange portion 12, the notch 13 being made on the flat flange portion 12 in the innermost layer a of the multilayer container 10; and

(B) a top film 20 including

- (1) a lid portion 21 for sealing the multilayer container 10, the lid portion 21 being adhered strongly to the flat flange portion 12 of the multilayer container 10 at the outside of the notch 13; and
- (2) a tab portion 22 for picking the top film 20, the tab portion 22 extending from the rim of the lid portion 21, being integral with the lid portion 21, and being not adhered to the flat flange portion 12;

whereby upon progressive separation of the top film 20 from the tab portion 22, the innermost layer a is progressively peeled from the layer b adjacent to the innermost layer a, with the innermost layer a inside the notch 13 remaining unpeeled;

characterized in that the innermost layer a and the adjacent layer b are joined by means of a pressure sensitive adhesive c, the coefficient of adhesion between the multilayer container 10 and the top film 20 being larger than the coefficient of adhesion between the innermost layer a of the multilayer container 10 and the layer b adjacent to the innermost layer a of the multilayer container 10 generated by the pressure sensitive adhesive c; and the pressure sensitive adhesive c enabling to reseal the hermetically sealed package after opening.

The multilayer container to be used in the present invention is composed of at least two layers, preferably two layers each being made of a synthetic resin, and the two layers are laminated through a pressure sensitive adhesive. In other details, any technique employed conventionally in the art for forming multilayer containers may be applied for the multilayer container of the present invention.

The notch provided in the innermost layer of the multilayer container on the flat flange portion may surround completely around the peripheral portion of the boundary between the recessed portion and the flat flange portion, or extend incompletely around the peripheral portion with a part of the peripheral portion remaining unnotched. The part unnotched serves as a hinge of the top film whereby when preserving the remaining article in the package after opening, the package can be easily resealed by merely resetting the top film using the hinge as an axis.

Heretofore, multilayer sheets adhered by a pressure sensitive adhesive generally has not been used for molding containers since at the time of molding process, generation of bubbles occurs in the pressure sensitive adhesive layer resulting in moldings being extremely unpleasant in appearance. To ensure successful molding of the multilayer container of the present invention without generation of bubbles in the pressure sensitive adhesive layer, it is desirable to use a multilayer sheet laminated through a pressure sensitive adhesive which has been removed of the solvent therein by volatilization. The multilayer sheet may be produced by a method of coating a sheet layer with a pressure sensitive adhesive and subsequently laminating another sheet layer thereon, by coextruding the sheet materials with a pressure sensitive adhesive, or by any other method known in the art.

The innermost layer on the flat flange portion and outside the notch can be easily peeled from the layer adjacent to the innermost layer, and, on the other hand, the innermost layer and the top film are strongly

adhered each other outside the notch. Thus, while a satisfactorily hermetic seal is provided, opening of the package is facilitated because when removing the top film from the multilayer container, the innermost layer is peeled initially from the layer adjacent to the innermost layer from the edge of the multilayer container and is progressively separated with the top film at and along the notch. Further, the pressure sensitive adhesive remaining adhered to the delamination surfaces of the innermost layer and the layer adjacent to the innermost layer makes repeated reseal and reopen of the top film possible.

When a space of 0.5 to 10 mm, preferably 1.5 to 5 mm, is left between the inner boundary of the adhered portion and the notch, the peeling strength from the inside of the package may be increased to be substantially larger than that from the outside of the package

The preferred methods of providing a notch include a method of press with a cutting blade or heated blade and the like. The notch is generally provided by means of a U-shaped or V-shaped ring pressing object. When press and heating press are employed in combination, it is desirable that the resin material of the inner most layer has a melting point and a softening point lower than those of the resin material of the layer adjacent to the innermost layer. It is also desirable that the innermost layer is 200 μ m or thinner in thickness. The notch may also be provided by pressure molding a multilayer sheet material through an infusible material such as metals or resins having a melting point and softening point higher than those of the innermost layer material of the multilayer sheet material. By the method, heat seal of top film and flat flange portion and formation of notch can be accomplished simultaneously.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional elevating view of a hermetically sealed package of an embodiment of the present invention.

Fig. 2 is a partially sectional elevating view of the hermetically sealed package of FIG. 1 illustrating the top film being progressively peeled away.

FIG. 3 is a bottom view of the hermetically sealed package of FIG. 1.

FIG. 4 is a sectional elevating view of a hermetically sealed package of another embodiment of the present invention.

FIG. 5 is a partially sectional elevating view illustrating a method of providing a multilayer container with a notch and heat sealing a top film and a multilayer container simultaneously.

FIG. 6 is a partially sectional elevating view of a hermetically sealed package produced by the method illustrated in FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention hereinafter will be described in more details by means of embodiments of the present invention.

Referring to FIG. 1, which is a sectional elevating view of a hermetically sealed package of an embodiment of the present invention, a multilayer container 10 includes a recessed portion 11 and a flat flange portion 12 adjoining integrally the rim of the recessed portion 11, and has a sectional view being shaped like a hut. The multilayer container 10 is molded from two synthetic resin sheets, a and b, and the sheets a and b are adhered each other with a pressure sensitive adhesive. In FIG. 1, the pressure sensitive adhesive layer c is shown as a line. For convenience in description, the sheet inside the multilayer container is called inner layer a, and the sheet outside the multilayer container is called outer layer b.

A notch 13 surrounding the boundary between the recessed portion 11 and the flat flange portion 12 is provided in the inner layer a of the adhered synthetic resin sheets on the flat flange portion 12.

Top film 20 includes a lid portion 21 having an acreage enough to cover the opening and the flat flange portion 12 of the multilayer container 10, and a tab portion 22 extending from the lid portion 21. The top film 20 may be a sheet of synthetic resin sheet. The lid portion 21 is strongly adhered, for example with a strong adhesive, to the surface of the flat flange portion 12 of the multilayer container 10. In place of using an adhesive, a synthetic resin material of a type similar to that of the inner layer a may be used to be heat sealed strongly. It is essential that the coefficient of adhesion between the lid portion 21 and the flat flange portion 12 is larger than the coefficient of adhesion of the pressure sensitive adhesive adhering the synthetic resin sheets, a and b. The tab portion 22 is not adhered to the surface of the flat flange portion 12. Before adhering the top film 20 to the multilayer container 10, an article to be packaged is introduced in the multilayer container 10.

Referring to FIG. 2, which is a partially sectional elevating view of the hermetically sealed package of FIG. 1, there is illustrated the top film 20 being progressively peeled away. Upon pulling the tab portion 22

to the direction of an arrow A, a part of the inner layer 12a of the flat flange portion 12 outside the notch 13 is pulled along with the top film 20, and is peeled at the pressure sensitive layer c because the coefficient of adhesion between the inner layer 12a and the lid portion 21 is larger than that between the inner layer 12a and the outer layer 12b. The inner layer 12a is subsequently cut at the notch 13 resulting in the removal of the top film 20.

To the top film 20 thus removed does the inner layer 12a remain adhered, and to the delaminated surfaces of the inner layer 12a and outer layer 12b does the pressure sensitive adhesive remain adhered. Therefore, these surfaces with the pressure sensitive adhesive can be adhered again by pressing the top film 20 to reseal.

Referring to FIG. 3, which is a bottom view of the hermetically sealed package of FIG. 1, there is shown the protruding tab portion 22 which is not adhered to the flat flange portion 12 of the multilayer container 10. The notch 13 concealed in the layers of the package is shown by a dotted line. As shown in FIG. 3, the notch 13 is not provided to a portion 23 opposite to the tab portion 22. The part 23 supports the top film 20 to prevent the top film 20 from completely separating from the multilayer container 10, and serves as a hinge at the time of opening and shutting. It is advantageous to extend the both end portion of the notch 13 perpendicularly, or substantially perpendicularly to the direction of opening the top film 20. It provides the inner layer 12a with a resistance to some degree when the inner layer 12a is coming to be torn beyond the both ends of the notch 13 by the tensile force applied to the tab portion 22. At need, holes may be provided to both ends of the notch 13 to prevent the inner layer 12a from being torn at the hinge portion. The holes may be provided only to the inner layer 12a, or completely through the multilayer sheet material.

FIG. 4 is a sectional elevating view of a hermetically sealed package of another embodiment of the present invention. The difference between the hermetically sealed packages of FIG. 4 and FIG. 1 is that in FIG. 4 the multilayer container 10 and the top film 20 are adhered at the flat flange portion 12 by heat seal, and a space t is left between the inner boundary of the heat seal portion 24 and the notch 13. The inner layer a and the outer layer b are laminated by adhering with a polyacrylate ester base pressure sensitive adhesive.

The invention is further explained and illustrated by the following Example.

Example

To a multilayer container produced from a multilayer sheet material of 785 μ m in thickness composed of an inner layer a of high density polyethylene and 60 μ m in thickness, pressure sensitive adhesive layer of 25 μ m in thickness, and an outer layer b of polypropylene and 700 μ m in thickness was heat sealed a top film, leaving a space t of 4 mm between the inner boundary of the heat seal portion and notch. The peeling strength of the package thus produced from the outside of the package was 1.17 kg/25 mm width at a peeling velocity of 300 mm/min, and the peeling strength from the inside of the package was 4.25 kg/ 25 mm width. It shows the excellency of the package in both the sealing property against the internal pressure and the easy openability at the time of access to the content therein.

The repeeling strength and resealing airtightness of the hermetically sealed package produced as described above were measured, and the results were as follows.

Repeeling strength means the peeling strength from the outside of a resealed package, and the measurement thereof was conducted at a peeling velocity of 300 mm/min, after a predetermined times of repeating removal and resetting of top film from and to multilayer container. The results are shown in the following Table 1.

TABLE 1

	Repeeling strength (kg/25 mm width)
The first time	1.17
The 2nd time	0.83
The 5th time	0.63
The 10th time	0.60
The 15th time	0.58
The 20th time	0.58

Resealing airtightness means the airtightness of a resealed package, and the measurement thereof was conducted according to JIS Z 0222, after a predetermined times of repeating removal and resetting of top film from and to multilayer container. For the purpose of comparison, the measurement was also conducted on an unopened hermetically sealed package and a hermetically sealed package which had been opened with a cutter. After allowing a package to stand for a predetermined days at a temperature of $40 \pm 1^\circ\text{C}$, a humidity of $90 \pm 2, \%$ and air flow of 1 m/s, the weight of moisture (g) absorbed by 100 g of calcium chloride charged in the package was measured. The results are shown in Table 2.

Table 2

Sample	Elapsed days			
	1	3	5	7
Unopened package	0	0	0.02	0.05
After two times opening	1.0	15	36	62
After five times opening	1.5	24	55	73
After opening with a cutter	38	61	86	114

As evident from the results shown in Table 2, the hermetically sealed package of the present invention is superior in sealing property to conventional inresealable packages.

Hereinafter, an example of the method of providing a notch to a multilayer container of the hermetically sealed package according to the present invention will be described referring to drawings.

FIG. 5 and FIG. 6 are each a partially sectional elevating view illustrating a method of providing a multilayer container with a notch and heat sealing a top film and a multilayer container simultaneously. A heat seal ring 30 is equipped integrally with a heat sealing portion 31, a pressing object 32, and an upwardly recessed portion between the heat sealing portion 31 and the pressing object 32, the pressing object 32 being located at a distance of t from the sealing portion 31 for the purpose of providing a notch by heating press. After introducing an article, an infusible layer 25 is placed on the inner layer a, and the heat seal ring 30 is then pressed to the package. Thus heat seal and formation of notch can be simultaneously accomplished. This method permits the space t to be uniform and heat seal and forming of notch to be accomplished without damaging of the shape of package.

While the preferred forms and embodiments have been illustrated and described in details, it will be apparent that changes and modifications may be made without deviating from the inventive concepts set forth above.

For example, the multilayer sheet material of the multilayer container is not necessarily to be a multilayer sheet material composed of two layers, and may be one composed of 3 or more layers. Further, it is not necessarily one made of synthetic resins. Furthermore, the top film to be used may be of a resin, a metal foil such as aluminum foil, a laminate sheet, and the like.

Claims

1. A hermetically sealed package comprising:

(A) a multilayer container (10) comprising at least an innermost layer (a) and a layer (b) adjacent to the innermost layer (a), the multilayer container (10) including

(1) a recessed portion (11);

(2) a flat flange portion (12) adjoining integrally the rim of the recessed portion (11); and

(3) a notch (13) surrounding the boundary between the recessed portion (11) and the flat flange portion (12); the notch (13) being provided on the flat flange portion (12) in the innermost layer (a) of the multilayer container (10); and

(B) a top film (20) including

(1) a lid portion (21) for sealing the multilayer container (10), the lid portion (21) being adhered strongly to the flat flange portion (12) of the multilayer container (10) at the outside of the notch (13); and

(2) a tab portion (22) for picking the top film (20), the tab portion (22) extending from the rim of the lid portion (21), being integral with the lid portion (21), and being not adhered to the flat flange portion (12);

whereby upon progressive separation of the top film (20) starting from the tab portion (22), the

- innermost layer (a) is progressively peeled from the layer (b) adjacent to the innermost layer (a), with the innermost layer (a) inside the notch (13) remaining unpeeled ; characterized in that the innermost layer (a) and the adjacent layer (b) are joined by means of a pressure sensitive adhesive (c) the coefficient of adhesion between the multilayer container (10) and the top film (20) being larger than the coefficient of adhesion between the innermost layer (a) of the multilayer container (10) and the layer (b) adjacent to the innermost layer (a) of the multilayer container (10) generated by the pressure sensitive adhesive (c); and the pressure sensitive adhesive (c) enabling to reseal the hermetically sealed package after opening.
2. The hermetically sealed package as defined in claim 1, wherein the lid portion (21) is adhered to the flat flange portion (12) of the multilayer container (10) at the outside of the notch (13) so that a space of 0.5 to 10 mm is left between the inner boundary of the seal and the notch (13).
 3. The hermetically sealed package as defined in either of claims 1 or 2, wherein the notch (13) extends continuously throughout a major part of the flat flange portion (12) leaving an unnotched hinge portion.
 4. The hermetically sealed package as defined in claim 3, wherein a hole is bored in the innermost layer (a) and the layer (b) adjacent to the innermost layer (a) at each end of the notch (13).
 5. A method of producing a hermetically sealed package comprising the steps:
 - (A) forming a multilayer sheet material comprising at least two layers (a,b) joined to each other by a pressure sensitive adhesive (c) into a multilayer container (10) including a recessed portion (11) and a flat flange portion (12) adjoining integrally the rim of the recessed portion (11) so that each of the two layers (a,b) composes respectively innermost layer (a) of the multilayer container (10) and layer (b) adjacent to the innermost layer (a) of the multilayer container (10);
 - (B) making a notch (13) surrounding the boundary between the recessed portion (11) and the flat flange portion (12) in the innermost layer (a) on the flat flange portion (12) of the multilayer container (10);
 - (C) introducing an article in the recessed portion (11) of the multilayer container (10); and
 - (D) adhering a top film (20) strongly to the flat flange portion (12) at the outside of the notch (13), the top film (20) including a lid portion (21) for sealing the multilayer container (10) and a tab portion (22) for picking the top film (20), the tab portion (22) extending from the rim of the flat flange portion (12), being integral with the lid portion (21), and being not to be adhered to the flat flange portion (12) of the multilayer container (10).
 6. A method of producing a hermetically sealed package comprising the steps:
 - (A) forming a multilayer sheet material comprising at least two layers (a,b) joined to each other by a pressure sensitive adhesive (c) into a multilayer container (10) including a recessed portion (11) and a flat flange portion (12) adjoining integrally the rim of the recessed portion (11) so that each of the two layers (a,b) composes respectively innermost layer (a) of the multilayer container (10) and layer (b) adjacent to the innermost layer (a) of the multilayer container (10);
 - (B) introducing an article in the recessed portion (11) of the multilayer container (10); and
 - (C) heat sealing strongly a top film (20) to the flat flange portion (12) of the multilayer container (10) and making a notch (13) surrounding the boundary between the recessed portion (11) and the flat flange portion (12) in the innermost layer (a) on the flat flange portion (12) of the multilayer container (10) and inside the inner boundary of the heat sealed portion (24) simultaneously, by pressing downwardly a heat seal ring (30) after sandwiching an infusible layer (25) covering the portion to which the notch (13) is to be provided, the heat seal ring (30) having an outer heat sealing portion (31) for heat seal and an inner pressing object (32) for providing the notch (13), the heat sealing portion (31) and the pressing object (32) being spaced from each other by an upwardly recessed portion to provide a space (t) between the inner boundary of the heat sealed portion (24) and the notch (13) of the multilayer container (10), the lower end of the pressing object being protruding downwardly from the level of the surface of the heat sealing portion (31) so that a notch (13) is formed in the innermost layer (a) of the multilayer container (10) by downward pressure applied through the infusible layer (25).

Pat ntsprüche

1. Hermetisch verschlossene Verpackung, welche umfaßt:

(A) einen mehrschichtigen Behälter (10), welcher mindestens eine innerste Schicht (a) und eine an die innerste Schicht (a) angrenzende Schicht (b) enthält, wobei der mehrschichtige Behälter (10)

(1) einen zurückgesetzten Teil (11);

(2) einen flachen Flanschteil (12), welcher vollständig an den Rand des zurückgesetzten Teils (11) angrenzt; und

(3) eine Kerbe (13), welche die Grenze zwischen dem zurückgesetzten Teil (11) und dem flachen Flanschteil (12) vollständig umläuft, wobei die Kerbe auf dem flachen Flanschteil (12) in der innersten Schicht (a) des mehrschichtigen Behälters (10) angebracht ist, umfaßt; und

(B) eine Deckfolie (20), welche

(1) einen Deckelteil (21) zum Verschließen des mehrschichtigen Behälters (10), wobei der Deckelteil (21) mit dem flachen Flanschteil (12) des mehrschichtigen Behälters (10) an der Außenseite der Kerbe (13) fest verbunden ist; und

(2) eine Lasche (22) zum Anheben der Deckfolie (20), wobei sich die Lasche (22) vom Rand des Deckelteils (21) aus erstreckt, mit dem Deckelteil (21) integriert ist und nicht mit dem flachen Flanschteil (12) verbunden ist, umfaßt;

wobei bei fortschreitender Trennung der Deckfolie (20) beginnend bei der Lasche (22) die innerste Schicht (a) ausgehend von der der innersten Schicht (a) benachbarten Schicht (b) abgelöst wird und die innerste Schicht (a) im Inneren der Kerbe (13) unabgelöst erhalten bleibt,

dadurch gekennzeichnet, daß die innerste Schicht (a) und die benachbarte Schicht (b) mittels eines druckempfindlichen Klebstoffs (c) verbunden sind, wobei der durch den druckempfindlichen Klebstoff (c) hervorgerufene Haftungskoeffizient zwischen dem mehrschichtigen Behälter (10) und der Deckfolie (20) größer ist als der Haftungskoeffizient zwischen der innersten Schicht (a) des mehrschichtigen Behälters (10) und der der innersten Schicht (a) benachbarten Schicht (b) des mehrschichtigen Behälters (10) und

es der druckempfindliche Klebstoff (c) erlaubt, die hermetisch verschlossene Verpackung nach dem Öffnen wieder zu verschließen.

2. Hermetisch verschlossene Verpackung gemäß Anspruch 1, worin der Deckelteil (21) mit dem flachen Flanschteil (12) des mehrschichtigen Behälters (10) auf der Außenseite der Kerbe (13) befestigt ist, so daß ein Zwischenraum von 0,5 bis 10 mm zwischen der inneren Grenze der Verklebung und der Kerbe (13) bestehen bleibt.

3. Hermetisch verschlossene Verpackung gemäß einem der Ansprüche 1 oder 2, worin die Kerbe (13) sich kontinuierlich über den größten Teil des flachen Flanschteils (12) erstreckt, wobei ein nicht gekerbter Scharnierteil verbleibt.

4. Hermetisch verschlossene Verpackung gemäß Anspruch 3, worin an jedem Ende der Kerbe (13) eine Öffnung in die innerste Schicht (a) und die der innersten Schicht (a) benachbarte Schicht (b) gebohrt ist.

5. Verfahren zur Herstellung einer hermetisch verschlossenen Verpackung, welches die Schritte umfaßt:

(A) Formen eines aus mehreren Schichten bestehenden Schichtmaterials, welches mindestens zwei durch einen druckempfindlichen Klebstoff (c) miteinander verbundene Schichten (a, b) enthält, zu einem mehrschichtigen Behälter (10), welcher einen zurückgesetzten Teil (11) und einen flachen, vollständig an den Rand des zurückgesetzten Teils (11) angrenzenden Flanschteil (12) umfaßt, so daß die beiden Schichten (a, b) die innerste Schicht (a) des mehrschichtigen Behälters (10) beziehungsweise die der innersten Schicht (a) benachbarte Schicht (b) des mehrschichtigen Behälters (10) bildet;

(B) Erzeugen einer die Grenze zwischen dem zurückgesetzten Teil (11) und dem flachen Flanschteil (12) umspannenden Kerbe auf dem flachen Flanschteil (12) in der innersten Schicht (a) des mehrschichtigen Behälters (10);

(C) Einbringen eines Gegenstandes in den zurückgesetzten Teil (11) des mehrschichtigen Behälters (10); und

(D) festes Aufkleben einer Deckfolie (20) an den flachen Flanschteil (12) an der Außenseite der Kerbe (13), wobei die Deckfolie (20) einen Deckelteil (21) zum Verschließen des mehrschichtigen

Behälters (10) und eine Lasche (22) zum Anheben der Deckfolie (20) umfaßt, wobei die Lasche sich vom Rand des flachen Flanschteils (12) erstreckt, mit dem Deckelteil (21) integriert ist und nicht an dem flachen Flanschteil (12) des mehrschichtigen Behälters (10) befestigt ist.

5 6. Verfahren zur Herstellung einer hermetisch verschlossenen Verpackung, welche die Schritte umfaßt:

- (A) Formen eines aus mehreren Schichten bestehenden Schichtmaterials, welches mindestens zwei durch einen druckempfindlichen Klebstoff (c) miteinander verbundene Schichten (a, b) enthält, zu einem mehrschichtigen Behälter (10), welcher einen zurückgesetzten Teil (11) und einen flachen, vollständig an den Rand des zurückgesetzten Teils (11) angrenzenden Flanschteil (12) umfaßt, so daß die beiden Schichten (a, b) die innerste Schicht (a) des mehrschichtigen Behälters (10) beziehungsweise die der innersten Schicht (a) benachbarte Schicht (b) des mehrschichtigen Behälters (10) bildet;
- (B) Einbringen eines Gegenstandes in den zurückgesetzten Teil (11) des mehrschichtigen Behälters (10); und
- 15 (C) starkes Heißsiegeln einer Deckfolie (20) auf den flachen Flanschteil (12) des mehrschichtigen Behälters (10) und gleichzeitiges Erzeugen einer die Grenze zwischen dem zurückgesetzten Teil (11) und dem flachen Flanschteil (12) umlaufenden Kerbe (13), die innerhalb der inneren Grenze des heißgesiegelten Bereichs (24) verläuft auf dem flachen Flanschteil (12) in der innersten Schicht (a) des mehrschichtigen Behälters (10), durch Herunterdrücken eines Heißsiegelrings (30) nachdem
- 20 eine nichtschmelzbare, den Bereich, an dem die Kerbe (13) angebracht werden soll, bedeckende Schicht (25) aufgebracht wurde,
- wobei der Heißsiegelring (30) einen äußeren Heißsiegelteil (31) zur Heißsiegelung und einen inneren Druckkörper (32) zum Ausbilden der Kerbe (13) aufweist,
- der Heißsiegelteil (31) und der Druckkörper (32) im Abstand voneinander durch einen nach oben zurückgesetzten Bereich getrennt sind, so daß ein Zwischenraum (t) zwischen der inneren Grenze des heißgesiegelten Bereichs (24) und der Kerbe (13) des mehrschichtigen Behälters (10) vorgesehen wird, und
- 25 wobei das untere Ende des Druckkörpers ausgehend von dem Niveau der Oberfläche des Heißsiegelteils (31) nach unten vorspringt, so daß eine Kerbe (13) in der innersten Schicht (a) des mehrschichtigen Behälters (10) durch einen nach unten gerichteten, durch die unschmelzbare Schicht (25) angelegten Druck gebildet wird.
- 30

Revendications

35 1. Emballage fermé hermétiquement comprenant:

- (A) un récipient multicouche (10) composé au minimum d'une couche la plus intérieure (a) et d'une couche (b) adjacente à la couche la plus intérieure (a), le récipient multicouche (10) comportant:
- (1) une partie en retrait (11) ;
- (2) une collerette plate (12) jointe intégralement à l'arête de la partie en retrait (11); et
- 40 (3) une incision (13) encerclant la zone de jonction entre la partie en retrait (11) et la collerette plate (12), l'incision (13) étant effectuée sur la collerette plate (12) dans la couche la plus intérieure (a) du récipient multicouche (10) ; et
- (B) un film supérieur (20) comprenant :
- (1) une partie couvercle (21) pour fermer le récipient multicouche (10), la partie couvercle (21) étant fortement collée à la collerette (12) du récipient multicouche (10) au-delà de l'incision (13) ;
- 45 et
- (2) une languette (22) pour pouvoir saisir le film supérieur (20), la languette (22) dépassant du bord de la partie couvercle (21), faisant partie intégrante de la partie couvercle (21) et n'étant pas collée à la collerette plate (12) ;
- 50 de sorte que, lors du détachement progressif du film supérieur (20) à partir de la languette (22), la couche la plus intérieure (a) est progressivement séparée de la couche (b) adjacente à la couche la plus intérieure (a), tandis que la couche la plus intérieure (a) située en-deçà de l'incision (13) ne se détache pas ;
- caractérisé en ce que la couche la plus intérieure (a) et la couche adjacente (b) sont reliées au moyen d'un adhésif sensible à la pression (c), et l'adhésif sensible à la pression (c) induit un coefficient d'adhérence entre le récipient multicouche (10) et le film supérieur (20) qui est plus élevé que le
- 55 coefficient d'adhérence entre la couche la plus intérieure (a) du récipient multicouche (10) et la couche (b) adjacente à la couche la plus intérieure (a) du récipient multicouche (10) ; et

l'adhésif sensible à la pression (c) permet la refermeture de l'emballage fermé hermétiquement, après son ouverture.

2. Emballage fermé hermétiquement suivant la revendication 1, dans lequel la partie couvercle (21) est collée à la collerette plate (12) du récipient multicouche (10) au-delà de l'incision (13) de façon à laisser un espace de 0,5 à 10 mm entre la limite intérieure de la jonction et l'incision (13).

3. Emballage fermé hermétiquement suivant une quelconque des revendications 1 ou 2, dans lequel l'incision (13) s'étend de façon continue sur la majeure partie de la collerette plate (12), laissant une partie non incisée formant charnière.

4. Emballage fermé hermétiquement suivant une revendication 3, dans lequel un trou est percé, à chaque extrémité de l'incision (13), dans la couche la plus intérieure (a) et dans la couche (b) adjacente à la couche la plus intérieure (a).

5. Procédé de fabrication d'un emballage fermé hermétiquement, comprenant les étapes de :

(A) transformation d'une feuille multicouche, composée d'au moins deux couches (a,b) reliées l'une à l'autre par un adhésif sensible à la pression (c), en un récipient multicouche (10) comportant une partie en retrait (11) et une collerette plate (12) jouxtant solidairement le bord de la partie en retrait (11) de façon à ce que les deux couches (a,b) forment respectivement la couche la plus intérieure (a) du récipient multicouche (10) et la couche (b) adjacente à la couche la plus intérieure (a) du récipient multicouche (10) ;

(B) exécution d'une incision (13), encerclant la zone de jonction entre la partie en retrait (11) et la collerette plate (12), dans la couche la plus intérieure (a) sur la collerette plate (12) du récipient multicouche (10) ;

(C) introduction d'un produit dans la partie en retrait (11) du récipient multicouche (10) ; et

(D) collage d'un film supérieur (20) fortement à la collerette plate (12) au-delà de l'incision (13), le film supérieur (20) comportant une partie couvercle (21) pour fermer le récipient multicouche (10) et une languette (22) pour soulever le film supérieur (20), la languette (22) dépassant du bord de la collerette plate (12), faisant partie intégrante de la partie couvercle (21) et n'étant pas collée à la collerette plate (12) du récipient multicouche (10).

6. Procédé de fabrication d'un emballage fermé hermétiquement, qui comprend les étapes de :

(A) formation d'une feuille multicouche, comprenant au minimum deux couches (a,b) reliées l'une à l'autre par un adhésif sensible à la pression (c), en un récipient multicouche (10) qui présente une partie en retrait (11) et une collerette plate (12) jouxtant solidairement le bord de la partie en retrait (11) de façon à ce que les deux couches (a,b) forment respectivement la couche la plus intérieure (a) du récipient multicouche (10) et la couche (b) adjacente à la couche intérieure (a) du récipient multicouche (10) ;

(B) mise en place d'un produit dans la partie en retrait (11) du récipient multicouche (10) ; et

(C) thermosoudage d'un film supérieur (20) fortement à la collerette plate (12) du récipient multicouche (10), et formation d'une incision (13) qui entoure la jonction entre la partie en retrait (11) et la collerette (12) du récipient multicouche (10), dans la couche la plus intérieure (a) sur la collerette plate (12) du récipient multicouche (10), et qui est en-deçà de la ligne de jonction de la partie thermosoudée (24), simultanément, par pression d'un anneau de thermosoudage (30) vers le bas après interposition d'une couche non fusible (25) qui recouvre la partie où l'incision doit être formée ; l'anneau de thermosoudage (30) possédant une partie de thermosoudage extérieure (31) pour le thermosoudage et un élément de pression intérieur (32) qui sert à former l'incision (13) ; la partie de thermosoudage (31) et l'élément de pression (32) étant espacés l'un de l'autre par une partie en retrait vers le haut afin de définir un espace (t) entre la limite intérieure de la partie thermosoudée (24) et l'incision (13) du récipient multicouche (10), et l'extrémité basse de l'élément de pression faisant saillie vers le bas par rapport à la surface de la partie de thermosoudage (31) de façon à ce que l'incision (13) soit formée dans la couche la plus intérieure (a) du récipient multicouche (10) par une pression vers le bas appliquée par l'intermédiaire de la couche non fusible (25).

Fig. 1

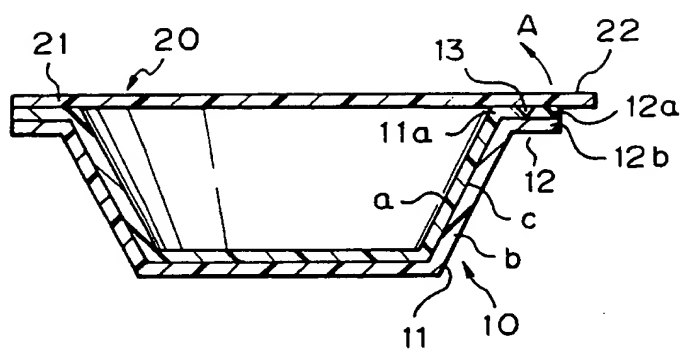


Fig. 3

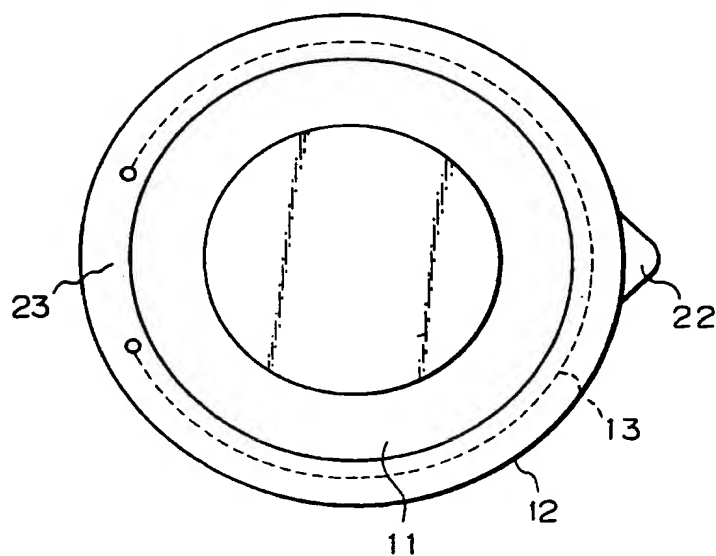


Fig. 2

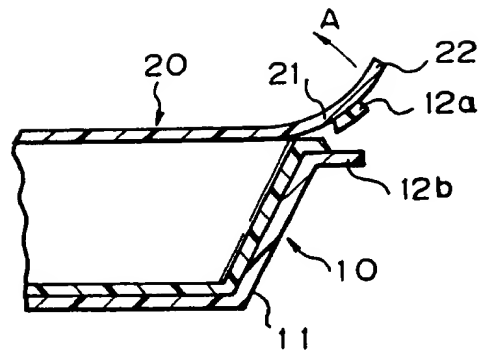


Fig. 4

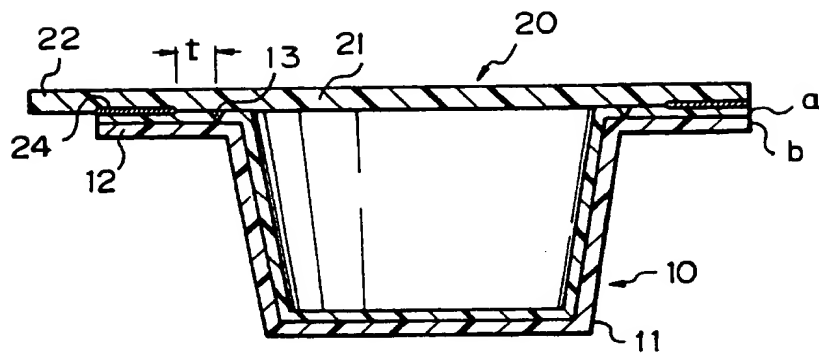


Fig. 5

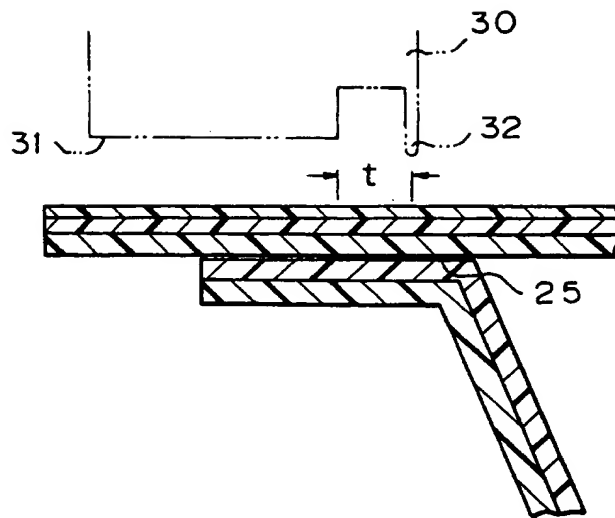


Fig. 6

